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PRELIMINARY REPORT
INDUSTRY SERIES

1987 Census of Mineral Industries

MIC87-I-14B(P)
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SAND AND GRAVEL

Industries 1442 and 1446

INTRODUCTION

This report presents preliminary statistics from the 1987 Census of Mineral Industries for those establishments classified in the industries listed above. These data will be superseded by a more comprehensive final paperbound report. The method of data collection and use of administrative data are discussed in detail in the appendix.

All dollar figures included in this report are at prices current for the year specified and, therefore, unadjusted for changes in price levels. Consequently when making comparisons to prior years, users should take into consideration the inflation that has occurred.

The definitions of these industries are the same as those used in the 1987 Standard Industrial Classification (SIC) manual.[1]

INDUSTRY 1442, CONSTRUCTION SAND AND GRAVEL

In the 1987 Census of Mineral Industries, Industry 1442, Construction Sand and Gravel, had employment of 28.7 thousand. The employment figure was 23 percent above the 23.4 thousand reported in 1982. The total value of shipments and receipts for establishments classified in this industry was $2.7 billion.

In 1987, establishments in industry 1442 accounted for 85 percent of products considered primary to the industry. The products primary to this industry appear in table 2 and aggregated to $3.0 billion in 1987. The total cost of supplies used by establishments in this industry amounted to $894.8 million in 1987. Data on specific supplies consumed appear in table 3a. The cost of fuels used by establishments in this industry amounted to $126.7 million in 1987. Data on specific fuels consumed appear in table 3b.

INDUSTRY 1446, INDUSTRIAL SAND

In the 1987 Census of Mineral Industries, Industry 1446, Industrial Sand, had employment of 4.3 thousand. The employment figure remained the same as reported in 1982. The total value of shipments and receipts for establishments classified in this industry was $447.5 million.

In 1987, establishments in industry 1446 accounted for 97 percent of products considered primary to the industry. The products primary to this industry appear in table 2 and aggregated to $417.0 million in 1987. The total cost of supplies used by establishments in this industry amounted to $157.6 million in 1987. Data on specific supplies consumed appear in table 3a. The cost of fuels used by establishments in this industry amounted to $29.3 million in 1987. Data on specific fuels consumed appear in table 3b.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in the tables in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies; data are included in higher level totals.
(NA)	Not available.
(NC)	Not comparable.

[1] **Standard Industrial Classification Manual: 1987.** For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Stock number 041-001-00314-2.

Address inquiries to Bureau of the Census, Industry Division, Washington, DC, or call **Susan Beattie** (301)763-5938.

U.S. Department of Commerce
BUREAU OF THE CENSUS

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C 3.216/3:

(S)	Withheld because estimate did not meet publication standards on the basis of either the response rate or a consistency review.
(X)	Not applicable.
(Z)	Less than half the unit shown.
do	Ditto.
n.e.c.	Not elsewhere classified.
n.s.k.	Not specified by kind.
pt.	Part.
r	Revised.
SIC	Standard Industrial Classification.

Other abbreviations, such as lb, gal, yd, cu ft, and bbl are used in the customary sense. Where the term "s tons" only is used, it refers to short tons of 2,000 pounds; where the figures are expressed in tons of 2,240 pounds, the unit of measure is specified as "l tons."

CONTACTS FOR DATA USERS

Subject Area	Contact	Phone
Mineral Industries–Five-year industry and product statistics	Minerals Branch Industry Division Bureau of the Census	(301) 763-5938
Mineral Industries–Annual product statistics (domestic and international) except fuels	Bureau of Mines Metals Nonmetallic Minerals International	(202) 634-1055 (202) 634-1202 (202) 632-8970
Mineral Industries–Coal and oil and gas production	National Energy Information Center (NEIC) staff Department of Energy	(202) 586-8800
To order any Census Bureau publication	Customer Services (DUSD) Bureau of the Census	(301) 763-4100
Import/Export publications	Foreign Trade Division	(301) 763-5140

Table 1. **Historical Industry Statistics: 1987 and Earlier Census Years**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix.]

Year	Establishments during year		All employees		Production, development, and exploration workers			Value added by mining (million dollars)	Cost of supplies used, purchased machinery installed, etc. (million dollars)	Value of shipments and receipts (million dollars)	Capital expenditures (million dollars)
	Companies (number)	Total (number)	With 20 employees or more (number)	Number (1,000)	Payroll (million dollars)	Number (1,000)	Hours (millions)	Wages (million dollars)			
INDUSTRY 1442, CONSTRUCTION SAND AND GRAVEL											
1987	(NA)	2 511	369	28.7	669.5	21.0	45.1	486.0	2 009.4	894.8	2 681.8	222.4
1982	2 059	2 552	275	23.4	437.2	17.4	34.9	324.5	1 112.1	593.6	1 535.3	170.4
1977	2 111	2 619	362	25.9	354.4	19.6	40.7	258.8	861.4	456.8	1 177.9	140.3
1972	(NA)	2 762	394	29.7	281.8	23.4	50.5	205.7	684.6	317.0	879.6	122.0
INDUSTRY 1446, INDUSTRIAL SAND											
1987	121	199	70	4.3	111.5	2.8	5.9	62.1	313.3	157.6	447.5	23.4
1982	132	206	68	4.3	83.2	3.2	6.6	55.1	223.5	159.3	341.9	40.9
1977	115	188	68	4.7	63.1	3.5	7.6	43.5	155.2	128.4	249.7	33.9
1972	(NA)	167	63	4.3	39.9	3.2	7.0	26.9	91.4	49.5	124.8	16.0

Note: Establishments of single unit companies with up to 20 employees (cutoff varied by industry) were excluded from the mail portion of the census. Data for these establishments (and a small number of larger establishments whose reports were not received at the time the data were tabulated) were estimated based on administrative-record information from other agencies in conjunction with industry averages. These establishments accounted for the following percent of total value of shipments: SIC 1442, 28%; SIC 1446, 14%.

Table 2. **Products or Services: 1987 and 1982**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix.]

Product code	Product	1987			1982		
		Quantity of production for all purposes	Product shipments		Quantity of production for all purposes	Product shipments	
			Quantity	Value (million dollars)		Quantity	Value (million dollars)
1442-- --	**CONSTRUCTION SAND AND GRAVEL**						
	Total	(X)	(X)	2 967.0	(X)	(X)	1 703.5
14421 --	Construction sand and gravel (run of pit or bank) mil s tons	55.8	56.7	138.5	45.1	43.7	104.7
14421 01	Construction sand do	29.0	29.8	70.1	23.7	23.0	52.7
14421 05	Gravel do	26.8	26.9	68.4	21.4	20.7	52.0
14422 --	Construction sand and gravel (washed, screened, ground, or otherwise treated) do	422.8	411.3	1 586.8	272.6	264.9	929.4
14422 01	Construction sand do	216.1	211.7	774.5	136.2	132.6	433.1
14422 05	Gravel do	206.7	199.6	812.3	136.4	132.3	496.3
14420 --	Construction sand and gravel, n.s.k.[1][2]	(X)	(X)	1 241.7	(X)	(X)	669.5
14420 00	Produced at establishments classified in mineral industries	(X)	(X)	964.2	(X)	(X)	493.6
14420 01	Produced at establishments classified in manufacturing industries mil s tons	(NA)	58.8	277.5	(NA)	40.8	175.9
1446-- --	**INDUSTRIAL SAND**						
	Total	(X)	(X)	417.0	(X)	(X)	347.0
14461 00	Glass sand mil s tons	13.3	13.2	161.7	13.0	12.9	150.5
14465 00	Molding sand do	4.3	4.2	44.9	3.9	4.1	38.0
14469 00	Industrial sand, n.e.c. do	8.3	7.8	138.2	6.6	6.3	123.2
14460 00	Industrial sand, n.s.k.[1]	(X)	(X)	72.3	(X)	(X)	35.4

[1]Includes value for establishments that did not report detailed data and estimates for small companies (estimates were made from administrative-record data rather than collected from respondents.)

[2]Includes construction sand and gravel shipped by establishments classified in manufacturing industries.

Table 3a. Selected Supplies, Minerals Received for Preparation, and Purchased Machinery Installed: 1987 and 1982

[Includes quantity and cost of supplies consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Supply code	Industry and supply consumed		1987		1982	
			Quantity	Delivered cost (million dollars)	Quantity	Delivered cost (million dollars)
	INDUSTRY 1442, CONSTRUCTION SAND AND GRAVEL					
	Selected supplies used, minerals received for preparation, and purchased machinery installed		**(X)**	**552.8**	**(X)**	**379.0**
	Minerals or ores for preparation:					
142101	Broken stone received for preparation	mil s tons	4	1.5	1.2	3.8
144191	Sand and gravel received for preparation	do	23.1	43.3	7.3	12.9
353020	Purchased machinery installed, including equipment installed at the operation as well as mobile loading and transportation equipment		(X)	109.0	(X)	54.0
353030	Parts and attachments (except those listed elsewhere) for construction, mining, and conveying equipment, and for preparation machinery		(X)	73.2	(X)	54.3
	Supplies used:					
289211	Explosive materials, except ammonium nitrate	mil lb	(S)	2.3	5.1	2.2
289212	Ammonium nitrate	do	2.9	5	1.4	2
289214	Blasting accessories		(X)	8	(X)	1
300167	Rubber and plastics products, including tires and tubes		(X)	6.4	(X)	4.1
331201	Steel mill shapes and forms (such as plates, sheets, roof bolts, bars, rails, wheels, pipe, tubing, wire products, and structural shapes)		(X)	7.6	(X)	9.4
970099	All other supplies		(X)	60.1	(X)	38.1
971000	Undistributed—minerals, purchased machinery, parts, attachments, and supplies used[1]		(X)	248.1	(X)	199.8
	INDUSTRY 1446, INDUSTRIAL SAND					
	Selected supplies used, minerals received for preparation, and purchased machinery installed		**(X)**	**83.3**	**(X)**	**86.4**
	Minerals or ores for preparation:					
142101	Broken stone received for preparation	mil s tons	(D)	(D)	-	-
144191	Sand and gravel received for preparation	do	(S)	4.4	.7	3.8
353020	Purchased machinery installed, including equipment installed at the operation as well as mobile loading and transportation equipment		(X)	13.7	(X)	23.0
353030	Parts and attachments (except those listed elsewhere) for construction, mining, and conveying equipment, and for preparation machinery		(X)	12.9	(X)	12.9
	Supplies used:					
289211	Explosive materials, except ammonium nitrate	mil lb	(S)	8	1.0	5
289212	Ammonium nitrate	do	(S)	6	2.4	3
289214	Blasting accessories		(X)	(D)	(X)	4
300167	Rubber and plastics products, including tires and tubes		(X)	6	(X)	9
331201	Steel mill shapes and forms (such as plates, sheets, roof bolts, bars, rails, wheels, pipe, tubing, wire products, and structural shapes)		(X)	3.8	(X)	2.5
970099	All other supplies		(X)	31.2	(X)	27.7
971000	Undistributed—minerals, purchased machinery, parts, attachments, and supplies used[1]		(X)	14.5	(X)	13.5

[1]Represents cost for establishments that did not report detailed data, including establishments that were not mailed a form.

Table 3b. Fuels Consumed by Type: 1987 and 1982

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendix]

Fuel code	Industry and fuel consumed		1987		1982	
			Quantity	Delivered cost (million dollars)	Quantity	Delivered cost (million dollars)
	INDUSTRY 1442, CONSTRUCTION SAND AND GRAVEL					
	Fuels used		**(X)**	**126.7**	**(X)**	**86.6**
120005	Coal—bituminous, subbituminous, lignite, and anthracite	1,000 s tons	(Z)	(Z)	(Z)	(Z)
	Fuel oil:					
291141	Distillate (light) grade numbers 1, 2, 4, and light diesel fuel	1,000 bbl	1,247.3	34.8	856.3	36.7
291151	Residual (heavy) grade numbers 5 and 6 and heavy diesel fuel	do	127.6	3.6	103.7	3.3
131159	Gas—natural, manufactured, and mixed	bil cu ft	2	5	.4	1.3
291111	Gasoline	mil gal	5.9	4.7	7.1	7.8
960018	Other fuels—liquefied petroleum gas, coke, wood, and other		(X)	2.6	(X)	1.8
974000	Undistributed fuels[1]		(X)	80.5	(X)	35.7
	INDUSTRY 1446, INDUSTRIAL SAND					
	Fuels used		**(X)**	**29.3**	**(X)**	**35.7**
120005	Coal—bituminous, subbituminous, lignite, and anthracite	1,000 s tons	(D)	(D)	21.6	1.0
	Fuel oil:					
291141	Distillate (light) grade numbers 1, 2, 4, and light diesel fuel	1,000 bbl	151.4	4.1	132.6	5.5
291151	Residual (heavy) grade numbers 5 and 6 and heavy diesel fuel	do	(D)	(D)	65.7	2.4
131159	Gas—natural, manufactured, and mixed	bil cu ft	7.0	14.3	4.0	16.4
291111	Gasoline	mil gal	.7	.7	.9	1.0
960018	Other fuels—liquefied petroleum gas, coke, wood, and other		(X)	1.5	(X)	6.0
974000	Undistributed fuels[1]		(X)	6.8	(X)	3.3

[1]Represents cost for establishments that did not report detailed data, including establishments that were not mailed a form.

APPENDIX
SCOPE AND COVERAGE AND EXPLANATION OF TERMS

SCOPE AND COVERAGE

Establishment Basis of Reporting

The census of mineral industries covers each mining establishment of firms with one paid employee or more operating in the United States. A firm operating more than one establishment is required to file a separate report for each location. Companies engaged in distinctly different lines of activity at one location are asked to submit separate reports if records permit such a separation and the activities are of significant size.

Statistics for employment and payroll for individual industries and industry groups also include employment and payroll figures for administrative offices, warehouses, storage facilities, and other auxiliary establishments servicing mining establishments. Respondents were asked to file separate reports for any separately operated auxiliary establishments. Classification of employment and payroll data at such auxiliary establishments was based on the mining establishments served.

For oil and gas field operations and for contract services, the basis for reporting was different from the "establishment" basis used for other types of mining. Firms operating oil and gas wells, drilling wells, or exploring for oil and gas for their own account were required to submit a separate report for each State or offshore area adjacent to a State in which it conducted such activities. Firms which supplied contract services for oil and gas field operations or for mining establishments were required to submit one report covering all such activities in the United States and to include information on production, development, and exploration workers' hours and wages and on receipts for services by State. These consolidated service reports were then allocated to State establishments based on the data reported at the State level.

Use of Administrative Records

From a mailout universe of 34,000 mining establishments, approximately 11,000 small single establishment companies were not mailed a questionnaire. For these establishments, some employment, payroll, and receipts data were obtained from the administrative records of other agencies. Selection of the small establishment non-mail cases was done on an industry-by-industry basis, and a variable cutoff was used to determine those establishments for which administrative records were to be used in place of a census report. This information was then used in conjunction with industry averages to estimate the statistics for administrative-record and nonresponse establishments. The value of shipments and receipts and cost of supplies were not distributed among specific products and supplies for these establishments, but were included in the product and supply "not specified by kind" categories. Overall, establishments for which administrative-record data were used accounted for less than 3 percent of total value of shipments.

Value of Shipments and Receipts for the Industry Compared to Value of Product Shipments

Figures for value of shipments and receipts represent the total shipments and receipts for all establishments classified in this industry and include products primary to the industry, products classified as primary in other industries but secondary to this industry, and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments represents products classified as primary to this industry that were shipped by all mining and manufacturing establishments, regardless of their industry classification.

EXPLANATION OF TERMS

All employees—Includes all full-time and part-time employees on the payrolls of operating mineral establishments for any part of the pay period including the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacation during these pay periods. Officers of the corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employee" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average of those for the midmonth payroll periods of March, May, August, and November.

Payroll—Includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of these establishments, if it is a corporation; it excludes payments to the proprietor or partners, if it is an

unincorporated concern. Respondents were told that in reporting they could follow the definition of payroll used for calculating the Federal withholding tax.

Production-, development-, and exploration-worker hours—Represents all hours that production, development, and exploration workers worked both on active days during which there was production or development work and on inactive days when only guards, inspectors, repairpersons, and other maintenance persons were on duty. It includes all hours worked or paid for at the mining operations, except hours for paid vacations, holidays, or sick leave, when the employee was not at the establishment. Included are actual overtime hours, not straight-time equivalent hours. Hours of working proprietors or partners are excluded.

Cost of supplies used, purchased machinery installed, etc.—Includes supplies, minerals received for preparation, and purchased machinery installed, fuels and electric energy used, contract work done by others, and cost of products bought and resold without further processing. It includes charges to both the current and capital accounts. It also includes the cost of items used during 1987 whether they were purchased, withdrawn from inventories, or received from other establishments of the company. Supplies and equipment used in mine development, plant expansion, and capitalized repairs which are chargeable to fixed assets accounts were included, as were supplies furnished without charge to contractors for use at the mining operation and supplies sold to employees for use at the establishment. No data on such costs as advertising, insurance, telephone, and research and consulting services of other establishments, or on overhead costs, such as depreciation charges, rent, interest, and royalties were included in this item. For selected supplies and fuels and for electric energy, both quantity and cost data were requested. The cost data refer to direct charges actually paid or payable (after discounts) for items used during the year. Freight charges and other direct charges incurred by the establishment in acquiring the item are included. Where the company's records did not show actual amounts used, they were asked to approximate use by adding purchases (or receipts) during the year to beginning inventory and subtracting ending inventory.

Specific supplies used and minerals prepared—In addition to the total cost of supplies used and purchased machinery installed, etc., which every establishment was required to report, information was also collected on the consumption of major supplies used in mining. These inquiries were restricted to supplies which were important parts of the cost of production, exploration, and development of a particular industry and for which cost information was available from the firms' records.

On report forms for almost all mineral industries, except the contract services industries, a uniform inquiry was included on minerals prepared at the reported establishments. Figures were obtained on minerals prepared from three sources: (1) crude minerals mined at the establishment (quantity), (2) crude minerals received from others (quantity and cost), and (3) crude minerals received for preparation on a custom or toll basis (quantity and estimated value).

Establishments consuming less than a specified amount (usually $25,000) were not requested to report separately the cost of a supply. Also, the cost of supplies for small establishments for which administrative records were used was estimated as "not specified by kind."

Specific fuels used—Includes the quantity and cost of fuels used in mining. For most industries, every establishment was required to report separate quantity and cost figures for purchased coal, distillate fuel oil, residual fuel oil, gas, and gasoline, and a cost figure for "other fuels," as shown in table 3b. The cost of fuels for small establishments for which administrative records were used was imputed as "not specified by kind."

Value added by mining—This measure of mining activity is derived by subtracting the total cost of supplies used, purchased machinery installed, etc., from the sum of the value of shipments and receipts (mining products plus receipts for services rendered) and total capital expenditures.

This statistic avoids the duplication in value of shipments and receipts, which results from the use of products of some establishments as supplies, energy sources, or materials by others. Moreover, it provides a measure of value added not only in mineral production but also in the development of mineral properties. For these reasons, it is considered to be the best value measure for comparing the relative economic importance of mining among industries and geographic areas.

Value of shipments and receipts—Includes the values f.o.b. mine, well, or plant (exclusive of freight and taxes) of all primary and secondary products shipped as well as all miscellaneous receipts such as receipts for contract work performed for others, installation and repair, sale of scrap, and sale of products bought and resold without further processing. Included are all items produced by the establishments and sold, transferred to other plants of the same company, or shipped on consignment.

In the case of multiunit companies, the firm was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value; i.e., including not only the direct costs of production but also a reasonable proportion of "all other costs" (including company overhead) and profit.

For industry and industry group totals, some duplication is introduced by the inclusion of materials transferred from one establishment to another for mineral preparation. Wherever value of shipments and receipts is shown without further specification, it represents gross shipments.

Shipments of individual products—In the 1987 Census of Mineral Industries, information was collected on the output of about 200 individual mineral product items. In general, the figures of the 1987 and 1982 mineral censuses were confined to separate totals for each crude and each prepared mineral. Where significant, separate shipments figures were also obtained for crude minerals going to preparation plants and those going to consumers.

Figures were collected on both quantity and value of shipments. Shipments included commercial shipments and transfers of products to other operations of the same company. For products which are used to a significant extent within the same establishment for power or heat and for minerals mined and prepared in the same establishment, total production or separate data on production for such uses were collected. Typically, production was also collected for products for which there are usually significant differences between the total production and total shipments as a result of stock changes.

For service industries, the amount received or due for services performed during 1987 was collected as a measure of output. For mine operators who also perform services, the amount received for such services was added to the total value of products shipped to determine total value of shipments and receipts for each establishment.

Capital expenditures—Covers expenditures made during the year for development and exploration of mineral properties, for construction, and for purchased machinery chargeable to fixed assets accounts of the mineral establishment. They are the type for which depreciation, depletion, or Office of Minerals Exploration accounts are ordinarily maintained. Capital expenditures during 1987 were to be determined as "additions completed during the year plus construction in progress at the end of the year minus construction in progress at the beginning of the year." Reported capital expenditures were to include work done by contract as well as by the mine forces. Expenditures for machinery and equipment were to include those made for replacement purposes as well as those for additions to capacity. Excluded from these expenditures were costs of maintenance and repairs charged as current operating expenses and expenditures for land and mineral rights.